Lockheed Martin SERAS 2890 Woodbridge Avenue Building 209 Annex Edison, NJ 08837-3679 Telephone 732-321-4200 Facsimile 732-494-4021



DATE:

February 16, 2012

TO:

Jeff Catanzarita, U.S. EPA/ERT Work Assignment Manager

FROM:

Jon McBurney, SERAS Project Engineer/Task Leader

THROUGH:

Dennis Miller, SERAS Program Manager

SUBJECT:

TRIP REPORT - SOIL GAS INVESTIGATION

CABO ROJO SITE – June 13 – 17, 2011 Work Assignment No.: SERAS-130

## PURPOSE

The purpose of this Trip Report is to detail the actions, observations and results of activities performed by Lockheed Martin Scientific, Engineering, Response and Analytical Services (SERAS) personnel at the Cabo Rojo Site (Site) in Cabo Rojo, Puerto Rico (PR). SERAS was tasked by the Environmental Protection Agency/Environmental Response Team (EPA/ERT) and EPA Region II to conduct a preliminary remedial investigation (RI) of the site to confirm or negate possible sources of groundwater contamination based on previous EPA findings and/or suspected sources of contaminants.

## BACKGROUND

The Site consists of a groundwater plume that has impacted several public drinking water supply wells in and around the municipality of Cabo Rojo, PR. The source of the plume has not been identified. Samples collected by the Puerto Rico Aqueduct and Sewer Authority (PRASA) from 2002 to 2006 have identified the presence of tetrachloroethene (PCE), trichloroethene (TCE), cis 1,2-dichloroethene (DCE) and 1,1-dichloroethene within the Cabo Rojo Urbano System, particularly in the Ana Maria well. EPA confirmed the presence of these contaminants in the Ana Maria well in 2007, and began site reconnaissance activities that included 68 facilities in and around Cabo Rojo. Preliminary Assessment/Site Inspections (PA/SI) were completed at fifteen facilities, 13 of which included soil and groundwater sampling. Although the source of the groundwater contamination was not specifically identified, contamination was detected at D'Elegant Fantastic Dry Cleaners, Extasy Q Prints, and Cabo Rojo Professional Dry Cleaners. The Site was listed on the National Priorities List on March 10, 2011 (US EPA 2012).

## **SITE ACTIVITIES**

During the week of June 13, 2011 SERAS personnel mobilized to the site to begin the remedial investigation. A list of facilities considered to be possible sources for the groundwater plume that had been given to ERT/SERAS by the Region 2 On-Scene Coordinator (OSC) prior to mobilization was used to plan the sampling strategy. Documentation regarding site access is included in Appendix A. The properties included in this study are:

Acevedo Cleaners (AC)
 D'Elegant Cleaners (DEC)

3. Acosta/Robert/Seda/Ojeda/Orria (CC)

4. Cabo Rojo Professional Dry Cleaners (CRPDC)

5. Eaton Cutler Hammer Electrical Co.(EC)

6. Extasy Q Prints (EQP)7. Bank Parking Lot (SB)

8. Robert's Steam Laundry (RSL)

9. Robert's Cleaners (RC)

10. PRIDCO Industrial Park (PIP)

11. Reto (R)

12. Serrano Dry Cleaners I (S1)

13. Serrano Dry Cleaners II (S2)

Rius St. corner Mestre St. Road 307 Intersection 100 64 Salvador Brau St. 50 and 52 Carbonell St. Fomento St. and Road 103

Urb. Borinquen #D4

Carbonell St.

32 Salvador Brau St.

33 Barbosa Ave.

Fomento St. and Road 103 Fomento St. and Road 103 70 Salvador Brau St.

17 ext. Carbonell St.

All properties are shown in Figure 1a. Municipal wells and wetland areas are shown in relation to the sampled properties on Figure 1b.

In order to maximize the coverage area and sampling effort, it was determined that soil gas sampling was the most efficient method of confirming and/or locating a source area. By collecting soil gas and analyzing the samples in the field on a Voyager field portable gas chromatograph (GC), adjustments could be made in the field to better identify source areas.

A SERAS field chemist, under an agreement between EPA and the United States Fish and Wildlife Services (FWS), set up a secure, controlled-environment field laboratory at the Cabo Rojo National Wildlife Reserve offices, located approximately 15 minutes south of the Site.

**Sampling Method**. At each property selected for investigation, sample locations were chosen by discussions with the Region 2 OSC and the ERT Work Assignment Manager (WAM) using information collected during previous site activities. Outdoor sample locations were marked, recorded using Global Positioning System (GPS) equipment and cleared for drilling using subsurface geophysical techniques. All locations were cleared by a SERAS subcontractor, GeoEnvirotech, using a combination of electromagnetic (EM) and ground penetrating radar (GPR) techniques.

For outdoor sample locations, samples were collected using either direct push (Geoprobe<sup>TM</sup>) or slam-bar methodology as per SERAS Standard Operating Procedure (SOP) #2042, *Soil Gas Sampling*. For direct push samples, the Geoprobe Post Run Tubing (PRT) system was utilized by GeoEnvirotech to create the sample point. For PRT sampling, a disposable point was installed on a PRT expendable point holder on the drive rod. The rod was then driven to the desired depth and retracted several inches to disengage the expendable point. A length of Teflon tubing was attached to a PRT adapter and fed down the drive rod, where the PRT adapter was screwed securely to the expendable point holder.

For locations collected using a slam-bar, a small diameter solid rod was driven to the required depth using an integrated sliding weight. Once the depth had been achieved, the bar was carefully removed, and a specially fabricated length of Teflon tubing was inserted into the hole and a small amount of clay was used to seal the tubing in the hole.

For indoor or sub-slab locations, soil gas wells were installed using a masonry drill and pre-fabricated soil gas wells per SERAS SOP #2082, *Construction and Installation of Permanent Sub-Slab Soil Gas Wells*. A hole was drilled through the slab, a well was inserted into the hole using a small amount of clay as a seal, and then the well was fixed in place with a small amount of cement. Teflon tubing with a special adapter was then threaded into the well 24 hours later after the cement had cured.

Samples were then collected from each type of port per SERAS SOP #2102, *Tedlar Bag Sampling* as follows. The installed Teflon tubing was first connected to a MultiRAE multi-gas meter and pumped for several minutes until steady state readings were noted. The VOC reading from the MultiRAE as well as the sample number and well depth were then recorded on a field Tedlar Bag Sampling Worksheet. The tubing was then connected to a specially constructed vacuum box containing a clean, labeled, 1-Liter (L) Tedlar bag. The box was then connected to an SKC battery-operated air pump for a minimum of two minutes or until the Tedlar bag inside the vacuum box was full. The Tedlar bag was then placed into a dark container and delivered to the field laboratory for analysis.

At two locations, a SUMMA canister sample was collected for laboratory verification at the ERT/SERAS Laboratory in Edison, NJ as per SERAS SOP #1704, *Summa Canister Sampling*. The SUMMA canister samples were shipped to the ERT/SERAS laboratory and analyzed per EPA Method TO-15.

At the completion of sample collection, all direct push locations were sealed with bentonite and patched as necessary with concrete or blacktop patch. All indoor locations were sealed with a threaded plug.

## **RESULTS**

The analytical results from this investigation indicate that there are measurable levels of PCE, TCE, and DCE at four of the 13 properties included in this investigation. The results from each location are detailed in Table 1 and discussed briefly below. The GPS coordinates for all sample locations are listed in Table 2. Photodocumentation of site activities is included as Appendix B. All completed Tedlar Bag Sampling Worksheets are attached in Appendix C. A brief field Photovac Voyager Operating Procedure is included as Appendix D. The preliminary analytical report for the confirmation samples is included in Appendix E, and a comparison of the confirmation results with the field results is detailed below.

**Acevedo Cleaners (AC) (Figure 1)** – No contamination was found in two indoor sub-slab samples.

Robert's Cleaners (RC) (Figure 1) – No contamination was found in one indoor sub-slab sample.

Robert's Steam Laundry (RSL) (Figure 1) - No contamination was found in one indoor sub-slab sample.

**D'Elegant Cleaners (DEC) (Figure 2)** – The DEC property was noted in the EPA PA/SI to contain levels of PCE, TCE and DCE that could be contributing to the groundwater contamination. The current site has been redeveloped and is now a Walgreen's Pharmacy. Figure 2 shows the location of the previous building as well as the approximate location of the new pharmacy building based on the drawing in Appendix E. DEC was the southernmost business in the original building. Sample locations were chosen to better locate the possible source of the contamination found during the PA/SI. Based on the soil gas results, there would seem to be a source area near sample DEC-05 as indicated by the estimated 50,200 parts per billion by volume (ppbv) of DCE. The other results from DEC-07 (approximately 850 ppbv DCE) and DEC-08 (approximately 980 ppbv DCE ) seem to indicate that the contamination is moving to the east.

**Acosta/Robert/Seda/Ojeda/Orria (CC) (Figure 3)** – This property consists of several retail businesses including a clothing store, an empty store, a Church's Fried Chicken, and a funeral home. Two outdoor samples and two indoor samples were non-detect for PCE, TCE and DCE.

**Serrano Dry Cleaners I (S1) (Figure 3)** – No contamination was found in three samples collected at this property.

Cabo Rojo Professional Dry Cleaners (CRPDC) (Figure 4) - The PA/SI for this property noted the presence of PCE and TCE. Sample locations were chosen to surround the property to better locate the source. Results from indoor sub-slab sample CRPDC-I01 indicate the presence of PCE at approximately 64,700 ppbv. A co-located SUMMA sample contained 100,000 ppbv PCE (678,000 micrograms per cubic meter [µg/m<sup>3</sup>]. The construction of the building is such that there is a crawl space beneath the concrete floor. Observations from the sampling personnel indicated that it was believed that the floor of the crawlspace was also concrete. This was confirmed by discussions with the OSC. The buildings in that area had been rebuilt after a flood and raised several feet to be above flood levels. Both other subslab samples, CRPDC-I02 and CRPDC-I03, collected from inside the building also contained PCE at approximately 4,870 and 9,200 ppbv respectively. A sample collected from beneath the sidewalk in the alleyway between the dry cleaners and the adjacent property to the east, CRPDC-I04 also contained high levels of PCE at approximately 25,700 ppbv. It is not known at this time if the crawlspace continued beneath multiple properties, or if the contamination has migrated outside the facility into the surrounding pore space. Samples to the west of the building CRPDC-03 and CRPDC-04 were non-detect for PCE, TCE and DCE. CRPDC-01, located in the northeastern corner of the parking lot, could not be sampled due to a significant amount of an oily residue in the subsurface soils.

Bank Parking Lot (SB) (Figure 4) – No contamination was found in four samples collected at this property.

**Eaton-Cutler (EC) (Figure 5)** – No contamination was found in four samples collected at this property.

**Puerto Rico Industrial Development Company (PRIDCO) Industrial Park (PIP) (Figure 5)** – Twenty-nine soil gas samples were collected from the PIP property. Of the 29, only 2, PIP-07 and PIP-13 contained contamination, 23 ppbv and 42 ppbv DCE respectively. PIP-07 and PIP-13 were both collected adjacent to properties formally used by Eaton Cutler.

**Reto** (R) (Figure 5) – This property is across the street from the PRIDCO property. No contamination was found in seven samples.

Extasy Q-Prints (EQP) (Figure 6) – This property contains a T-shirt printing operation to the south and a children's day care facility to the north. The east side of the building is an open air covered area where much of the cleaning and washing of the printing equipment occurs. Contamination was noted in subslab samples collected under the covered area in samples EQP-I02 (330 ppbv PCE) and EQP-I03 (approximately 980 ppbv PCE).

Results from the sub-slab sampling performed in one of the day care classrooms, sample EQP-I01, indicate the presence of PCE (approximately 4,970 ppbv), TCE (83 ppbv) and DCE (50 ppbv) in the vapor space under the floor. Sample EQP-03, located in the playground north of the daycare, contained 239 ppbv TCE.

Samples collected from the parking lot of the adjacent police station, EQP-06 and EQP-07 contained lower levels of TCE, 93 and 99 ppbv respectively. Sample EQP-05, also located in the parking lot, contained 430 ppbv of PCE. At this time, indications are that the PCE, TCE and DCE present under EQP may be moving to the north and east.

Late in the day on June 14, a noticeable solvent odor was reported by the sampling personnel inside the printing shop. An indoor air sample was scheduled for the following day. When the sample was collected the following morning, the samplers noted that the solvent odor was less than the previous day. Results from the indoor air sample, EQP-IA, contained 103 ppbv of PCE.

**Serrano Dry Cleaners II** (S2) (**Figure 7**) – This property is no longer a dry cleaner and the dry cleaning area is now being used as storage. The second story contains residential housing. Contamination was found to the north and to the east of the building. Samples S2-01 and S2-02 to the east contain 20 ppbv and approximately 1,700 ppbv PCE respectively. Sample S2-03 contained approximately 2,500 ppbv PCE and 91 ppbv TCE. No contamination was detected in the indoor sub-slab sample collected in the storage area. No contamination was detected in two samples to the north and west of the building.

## **Comparison of Field Screening Data with Confirmation Samples**

Field screening data was verified by the collection of two SUMMA canister samples that were shipped to the ERT/SERAS Laboratory in Edison, NJ for analysis by TO-15. The results were as follows:

Lagation	Amalusta	Field Screening Data	TO-15 Analysis			
Location	Analyte	ppbv	ppbv	$\mu g/m^3$		
	PCE	U (<10)	0.151	1.03		
PIP-14	TCE	U (<10)	U (<0.03)	U (<0.161)		
	DCE	U (<10)	U (<0.03)	U (<0.119)		
CRPDC-I01	PCE	64,700E	100,000	681,000		
	TCE	58	57.2	308		
	DCE	U (<10)	U (<0.15)	U (<0.607)		

E- Estimated, value above calibration range.

## **CONCLUSIONS**

Through the use of soil gas sampling and on-site analysis, the three previously detected possible sources, CRPDC, DEC and EQP were confirmed, two properties were added to the list of possible contributors, S2 and PIP (PIP-07 and PIP-13), and the eight remaining properties were eliminated as possible sources. It remains unclear which property has impacted the municipal groundwater wells.

The CRPDC property in 2006 was an operating dry cleaning facility. By the time this investigation began, all operations had ceased, and the facility was vacant. Soil samples collected in 2006 during the PA/SI indicated low levels of PCE in soils (23 micrograms per kilogram  $[\mu g/kg]$  and 29  $\mu g/kg$ ) found at the rear of the building under a covered porch. No sampling was performed inside the building in 2006. In comparison, sub-slab vapor results (64,700 ppbv) and confirmation results (100,000 ppbv) from this sampling event seem to indicate contamination under the foundation that was not found during the previous investigation.

The contamination found at the EQP location is of primary concern due to the proximity of the contamination to the children's day care facility. The soil gas results indicate that there is indeed contamination in the vapor space below the foundation, and also in the vapor space in the playground to the north of the building. Further investigation is necessary to fully evaluate the possible impacts of the subsurface contamination.

The contamination found at the PRIDCO property in PIP-07 and PIP-13 requires further investigation. The buildings near the sampling locations were utilized by Eaton Cutler, and solvents were used in their daily activities.

Further investigation of the five contaminated properties, including groundwater and soil sampling, is required to characterize the source areas and determine the possible impacts to the local groundwater. Two properties were identified during the investigations that were not sampled due to time constraints. The two properties, both owned by PRIDCO, should be investigated.

## REFERENCES

"NPL Site Narrative for Cabo Rojo Ground Water Contamination | National Priorities List (NPL) | US EPA." *US Environmental Protection Agency*. Web. 11 Jan. 2012. <a href="http://www.epa.gov/superfund/sites/npl/nar1823.htm">http://www.epa.gov/superfund/sites/npl/nar1823.htm</a>.

Weston Solutions Region 2 Site Assessment Team 2 (SAT2 2007a). Preliminary Assessment/Site Inspection Report - D'Elegant Fantastic Dry Cleaners, Cabo Rojo, PR. Document Control No. SAT2.20113.066.577. October 2007

Weston Solutions Region 2 Site Assessment Team 2 (SAT2 2007b). Site Inspection Report - Extasy Q Prints, Cabo Rojo, PR. Document Control No. SAT2.20113.070.597. December 2007

Weston Solutions Region 2 Site Assessment Team 2 (SAT2 2007c). Site Inspection Report – Cabo Rojo Professional Dry Cleaners, Cabo Rojo, PR. Document Control No. SAT2.20113.067.581. October 2007

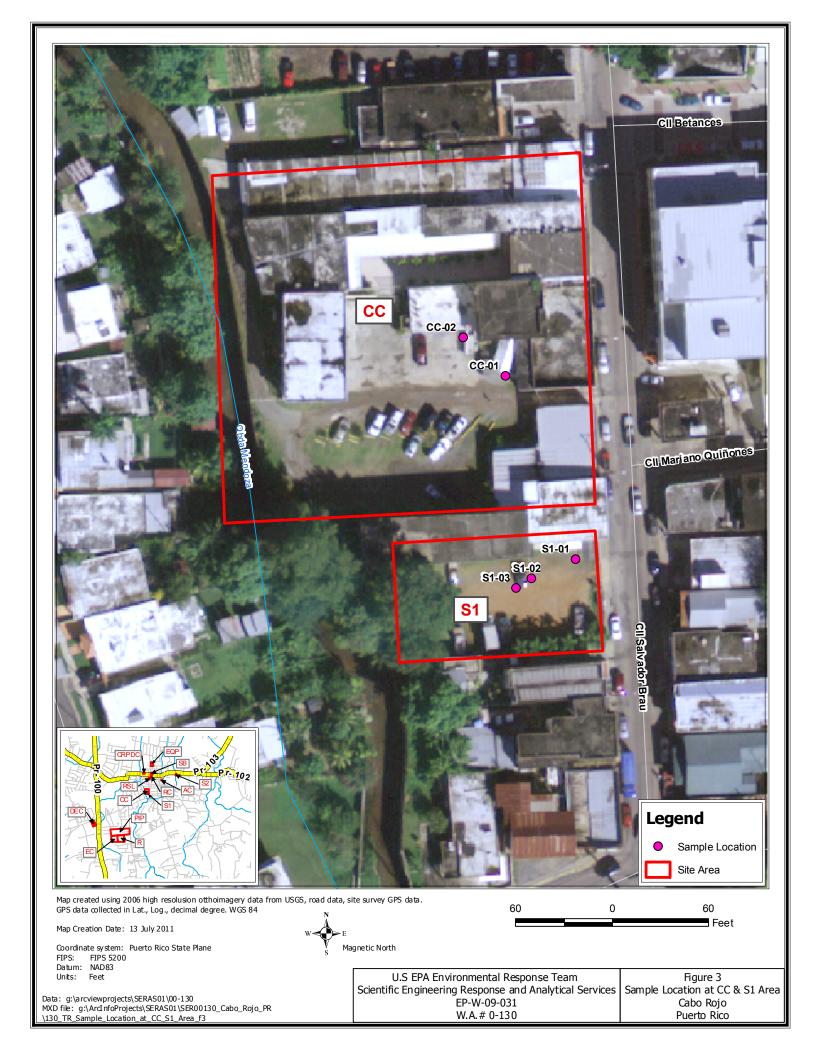
Table 1
Soil Vapor Field Analysis Results from June 14 - 18, 2011 Sampling Event
Cabo Rojo Site, Cabo Rojo, PR
February 2012

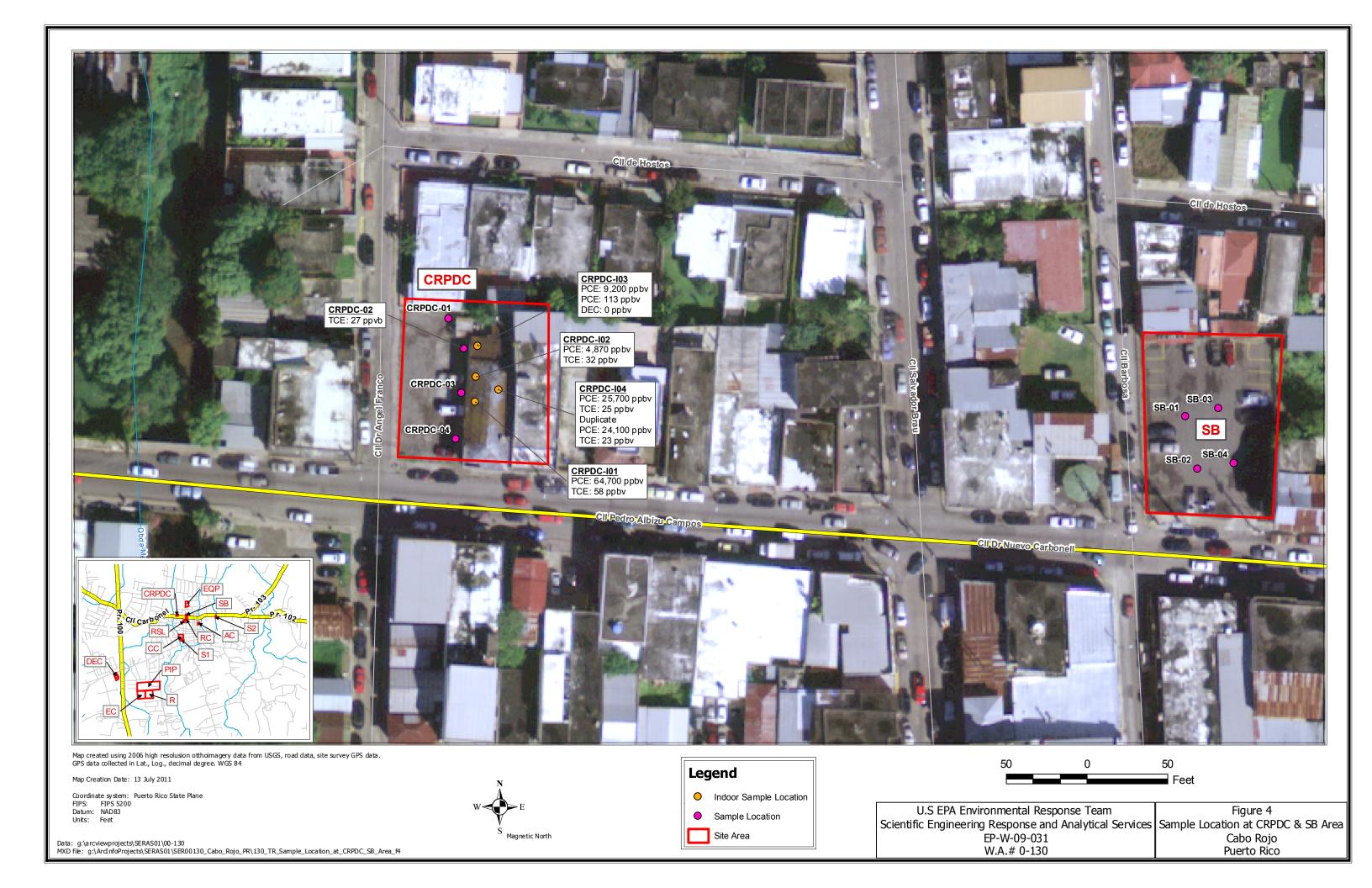
Property		DCE	TCE	PCE			Sample	DCE	TCE	PCE
1	Sample Location	ppbv	ppbv	ppbv		Property	Location	ppbv	ppbv	ppbv
	DEC-01	U	U	U			PIP-01	U	U	U
	DEC-02	U	U	U			PIP-01D	U	U	U
	DEC-03	U	U	U			PIP-02	U	U	U
	DEC-04	U	U	U			PIP-03	U	U	U
D'Elegant	DEC-05	50200 E	410	420			PIP-04	U	U	U
Cleaners (DEC)	DEC-06	39	U	U			PIP-05	U	U	U
(DEC)	DEC-07	850 E	U	U			PIP-06	U	U	U
	DEC-08	980 E	220	430			PIP-07	23	U	U
	DEC-I01	U	U	U			PIP-08	U	U	U
	DEC-I02	U	U	U			PIP-09	U	U	U
Acevado	AC-I01	U	U	U	U   20	U	U	U		
Cleaners (AC)	AC-I02	U	U	U U U U U U U U U U U U U U U U U U U		PIP-11	U	U	U	
Acosta /Robert/	CC-01	U	U	U			PIP-12	U	U	U
Seda/Ojeda/	CC-02	U	U				-		U	Ū
Orria	CC-I01	U	U				PIP-14		U	U
(CC)	CC-I03	U	U				PIP-15		U	U
	CRPDC-02	U	27	U		(PIP)		U	U	U
•	CRPDC-03	U	U						U	U
Cabo Rojo	CRPDC-04	U	U						U	Ü
Professional Dry	CRPDC-I01	U	58	_			_		U	U
Cleaners	CRPDC-I02	U	32						U	U
(CRPDC)	CPRDC-I03	U	113						U	Ü
	CRPDC-I04	U	25						U	U
	CRPDC-I04D	U	23				PIP-23	U	U	U
Eaton Cutler	EC-01	U	U	U		PIP-25	U	U	U	
Hammer	EC-02	U	U				-		U	U
Electrical Co.	EC-03	U	U						U	U
(EC)	EC-04	U	U				PIP-28	U	U	U
	EQP-01	U	U	U			PIP-29	U	U	U
•	EQP-02	U	U	U			PIP-29	U	U	U
	EQP-03	U	239						U	U
	EQP-04	U	U						U	U
	EQP-05	U	U						U	U
Extasy	EQP-06	U	93						U	U
Q-Prints	EQP-07	U	99						U	U
(EQP)	EQP-I01	50	83	4970 E				U	U	U
	EQP-I01D	51	83	5000 E			S1-01	U	U	U
	EQP-I02	U	U						U	U
l l	EQP-103	1700 E	190			(S1)			U	U
	EQP-IA	U	U						U	20
	SB-01	U	U						120	1700 E
Bank	SB-01	U	U						91	2500 E
Parking Lot	SB-03	U	U					_	U	U
(SB)	SB-04	U	U	U			S2-04 S2-05	U	U	U
Robert's										
Cleaners (RC)	RC-I01	U	J	U			S2-I01	U	U	U
Robert's Steam	DCI 104	11	1.1	1.1		E- Estimated, ppbv - p	arts per billio	n by volu	me, U - No	ot
Laundry (RSL)	RSL-I01	U	U	U		detected above Minin	num Detectio	n Limit (N	/IDL) of 10	ppbv

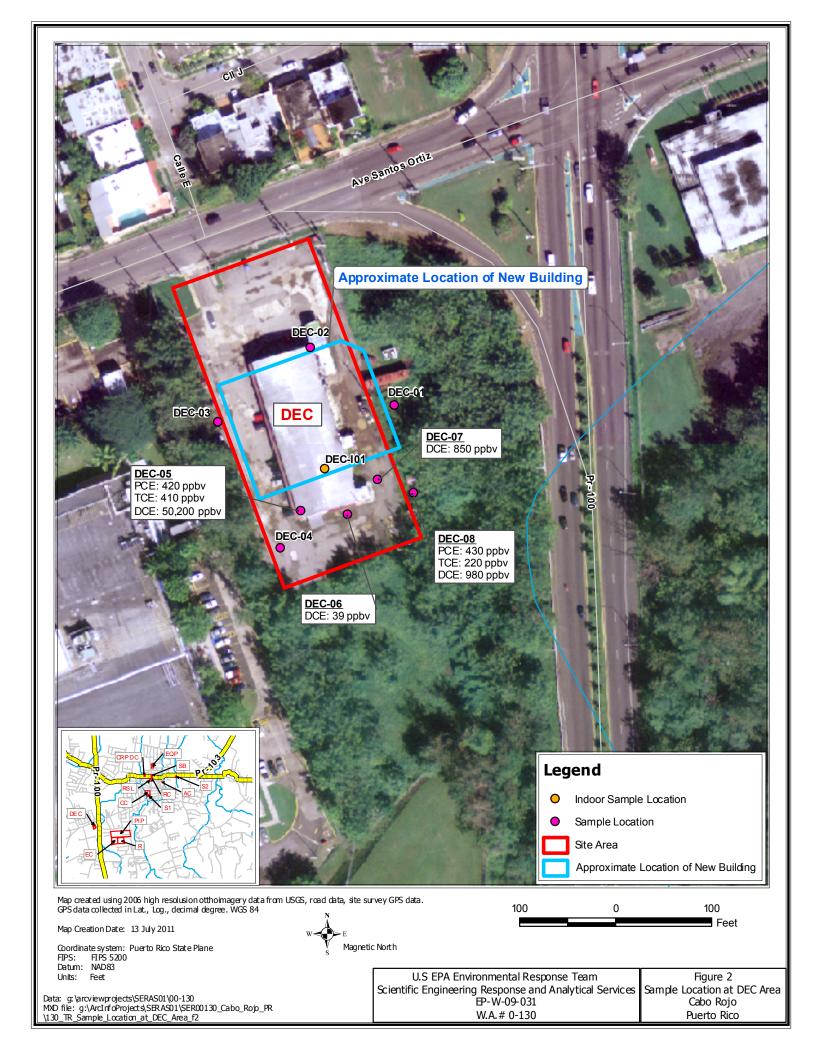
Table 2
Sample Location GPS Coordinates From June 14 -18, 2011 Sampling Event
Cabo Rojo Site, Cabo Rojo, PR
February 2012

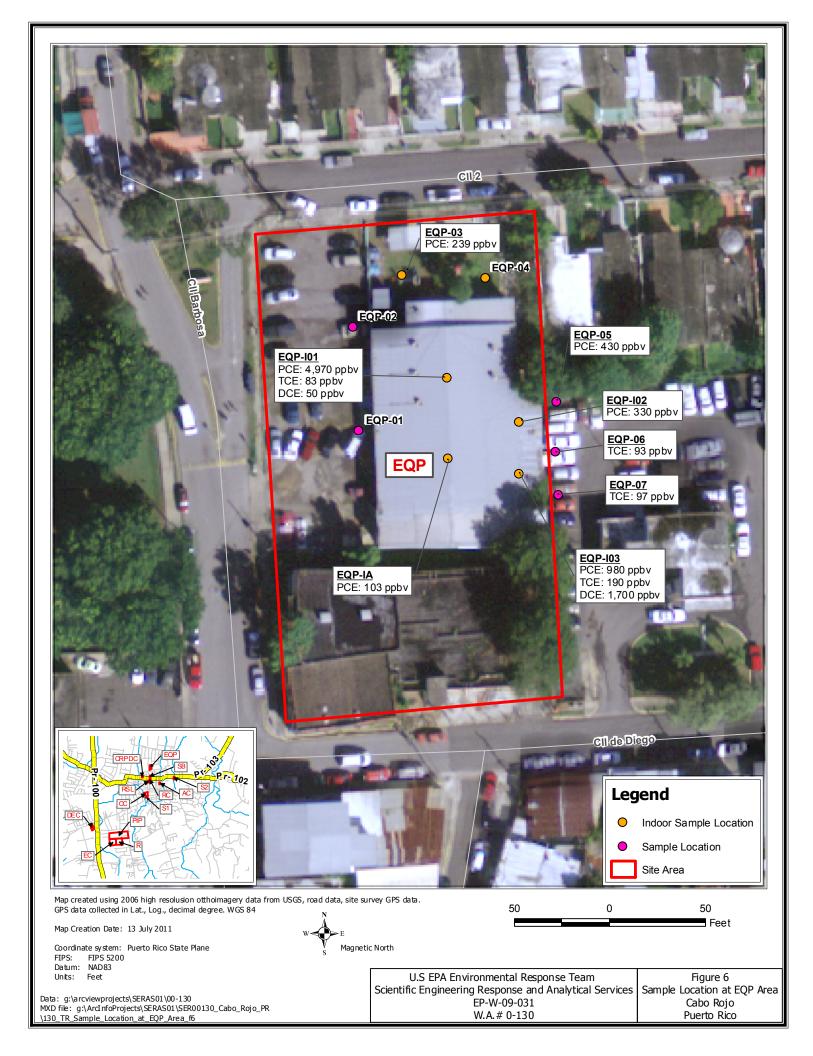
Property	Sample Location	Latitude	Longitude		Property	Sample Location	Latitude	Longitude
	DEC-01	18.0801	-67.1563		PRIDCO	PIP-14	18.0784	-67.1517
	DEC-02	18.0802	-67.1565			PIP-15	18.0785	-67.1518
	DEC-03	18.0800	-67.1568			PIP-16	18.0788	-67.1518
D'Elegant Cleaners	DEC-04	18.0797	-67.1566			PIP-17	18.0790	-67.1519
	DEC-05	18.0798	-67.1565			PIP-18	18.0786	-67.1514
(DEC)	DEC-06	18.0798	-67.1564			PIP-19	18.0787	-67.1513
	DEC-07	18.0799	-67.1563			PIP-20	18.0788	-67.1513
	DEC-08	18.0798	-67.1562		Industrial	PIP-21	18.0790	-67.1513
Acosta/Robert/Seda/	CC-01	18.0855	-67.1471		Park	PIP-22	18.0792	-67.1514
Ojeda/Orria (CC)	CC-02	18.0855	-67.1472		(PIP)	PIP-23	18.0793	-67.1509
	CRPDC-02	18.0885	-67.1479			PIP-25	18.0789	-67.1505
Cabo Rojo Professional	CRPDC-03	18.0884	-67.1479			PIP-26	18.0789	-67.1509
Dry Cleaners (CRPDC)	CRPDC-04	18.0884	-67.1479			PIP-27	18.0788	-67.1510
	EC-01	18.0778	-67.1524			PIP-28	18.0783	-67.1509
Eaton Cutler Hammer	EC-02	18.0776	-67.1524			PIP-29	18.0791	-67.1535
Electrical Co. (EC)	EC-03	18.0775	-67.1529		Reto (R)	R-01	18.0778	-67.1513
(EC)	EC-04	18.0778	-67.1529			R-02	18.0774	-67.1512
	EQP-01	18.0900	-67.1466			R-03	18.0772	-67.1516
	EQP-02	18.0902	-67.1466			R-04	18.0773	-67.1518
Extasy Q Prints (EQP)	EQP-05	18.0901	-67.1463			R-05	18.0772	-67.1523
(EQF)	EQP-06	18.0900	-67.1463			R-06	18.0776	-67.1523
	EQP-07	18.0899	-67.1463			R-06	18.0776	-67.1523
	PIP-01	18.0783	-67.1533			R-07	18.0780	-67.1520
	PIP-02	18.0785	-67.1534		Serrano Dry	S1-01	18.0852	-67.1470
	PIP-03	18.0785	-67.1535	_	Cleaners I (S1)	S1-02	18.0851	-67.1471
	PIP-04	18.0787	-67.1535			S1-03	18.0851	-67.1471
2212.00	PIP-05	18.0787	-67.1534		Serrano Dry Cleaners II (S2)	S2-01	18.0883	-67.1423
PRIDCO Industrial Park (PIP)	PIP-06	18.0783	-67.1530			S2-02	18.0883	-67.1423
	PIP-07	18.0786	-67.1530			S2-03	18.0884	-67.1423
	PIP-08	18.0791	-67.1530			S2-04	18.0884	-67.1424
	PIP-09	18.0785	-67.1525			S2-05	18.0883	-67.1424
	PIP-10	18.0786	-67.1526		Bank Parking Lot (SB)	SB-01	18.0884	-67.1466
	PIP-11	18.0782	-67.1523			SB-02	18.0883	-67.1466
	PIP-12	18.0784	-67.1523			SB-03	18.0884	-67.1465
	PIP-13	18.0791	-67.1524			SB-04	18.0883	-67.1465

Latitude/Longitude datum WGS 1984







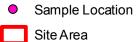




Coordinate system: Puerto Rico State Plane FIPS: FIPS 5200 Datum: NAD83 Units: Feet

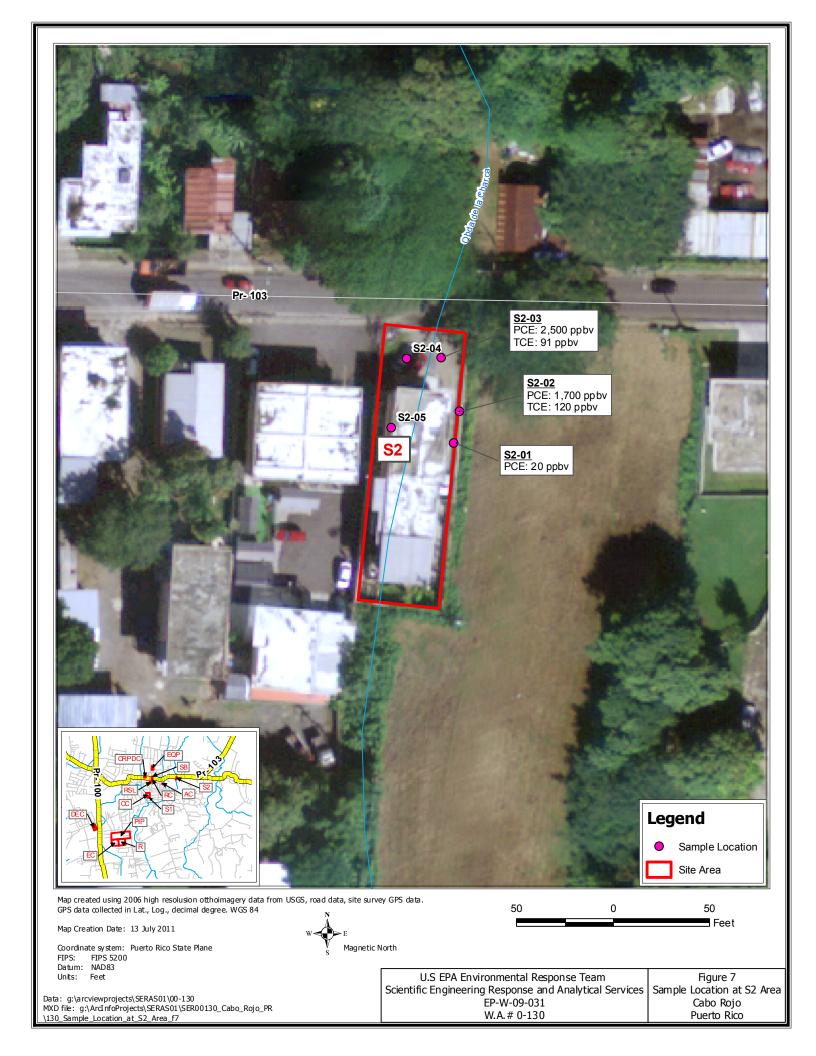
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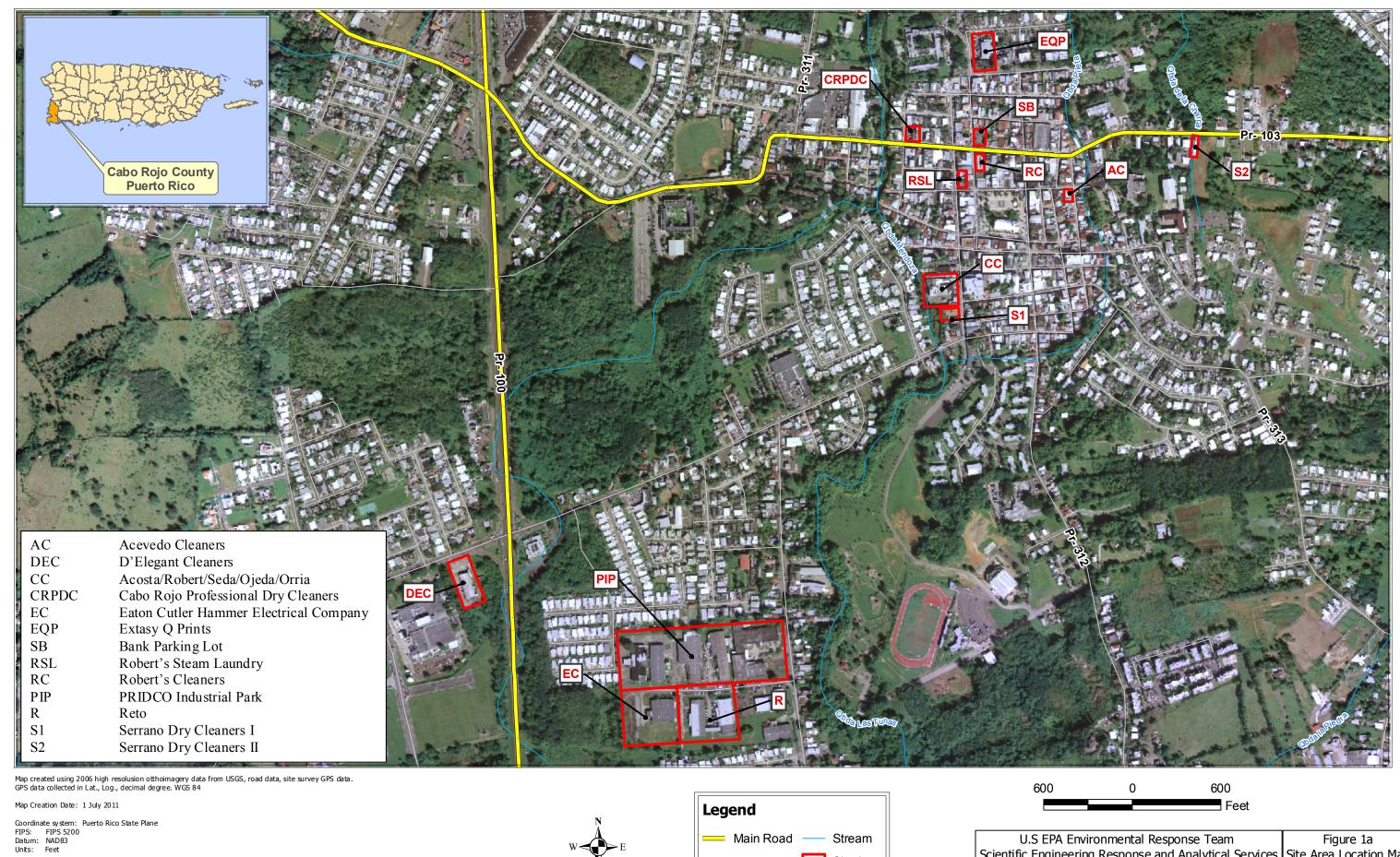
Magnetic North



U.S EPA Environmental Response Team Scientific Engineering Response and Analytical Services | Sample Location at PIP, EC & R Area EP-W-09-031 W.A.# 0-130

Figure 5 Cabo Rojo Puerto Rico





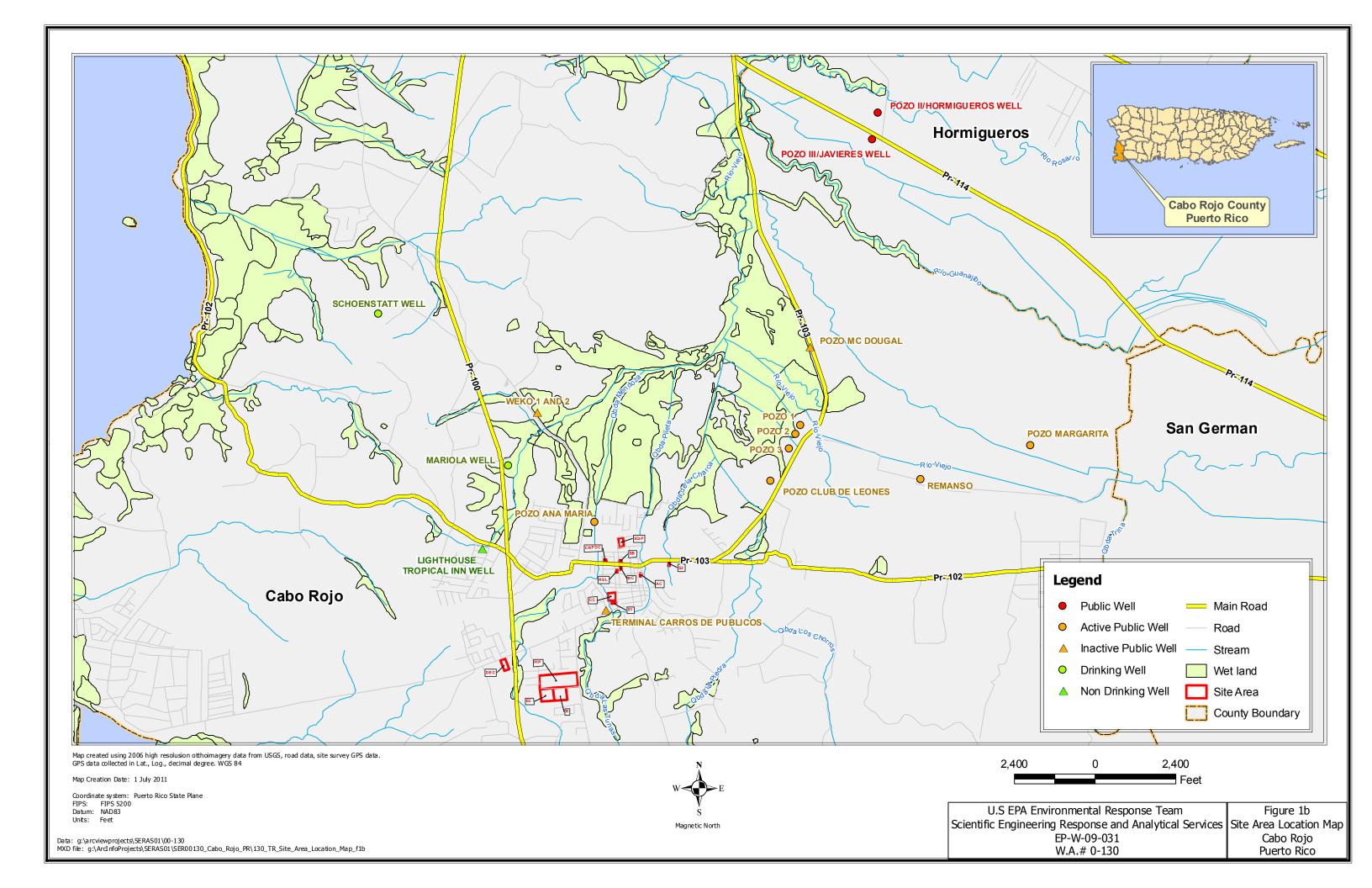
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U.S EPA Environmental Response Team Scientific Engineering Response and Analytical Services | Site Area Location Map EP-W-09-031 W.A.# 0-130

Figure 1a Cabo Rojo Puerto Rico



# APPENDIX A Site Access Agreements Cabo Rojo Site February 2012

## CONSENT FOR ACCESS TO PROPERTY

Address of Property in Which Interest Lies on #30 Carbonell Street, Cabo Rojo, Puerto Rico, I the undersigned, as owner or as a duly authorized representative of the owner consent to officers, employees, and authorized representatives of the United States Environmental Protection Agency ("EPA") entering and having continued access to the above-referenced property (hereinafter, "Property") to perform soil and ground water assessment activities. I understand that the assessment activities that will be performed at the property may include the following:

- Collection of soil gas vapor samples.
- Collection of soil and ground water samples using direct-push.
- Use of air monitoring instruments for health and safety purposes and/or wearing of protective clothing and equipment for compliance with Occupational Safety and Health Administration (OSHA) regulations.

I further consent to EPA releasing to the public all analytical results of any samples that EPA and its representative's collect or have collected on my property, as identified by my address.

I understand that EPA requires its contractors to maintain comprehensive vehicle liability insurance and comprehensive general liability insurance for bodily injury, death, and loss or damage to property or third person, arising from the activities of its contractors.

I realize that the actions taken on the Property by EPA, and its authorized representatives, are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA"), 42 U.S.C.§§9601-et seq.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind. By my signature I also acknowledge that I am fully authorized to grant such access.

Signature

Date

Name of Property Owner (Print)

## CONSENT FOR ACCESS TO PROPERTY

Address of Properties in Which Interest Lies on State Roads 103/308, SR 308/307 Int. 100 and State Road #103 (aka: Ave Santos Ortiz, Cabo Rojo, Puerto Rico, I the undersigned, as owner or as a duly authorized representative of the owner consent to officers, employees, and authorized representatives of the United States Environmental Protection Agency ("EPA") entering and having continued access to the above-referenced property (hereinafter, "Property") to perform soil and ground water assessment activities. I understand that the assessment activities that will be performed at the property may include the following:

- Collection of soil gas vapor samples.
- Collection of soil and ground water samples using direct-push.
- Use of air monitoring instruments for health and safety purposes and/or wearing of protective clothing and equipment for compliance with Occupational Safety and Health Administration (OSHA) regulations.

I further consent to EPA releasing to the public all analytical results of any samples that EPA and its representative's collect or have collected on my property, as identified by my address.

I understand that EPA requires its contractors to maintain comprehensive vehicle liability insurance and comprehensive general liability insurance for bodily injury, death, and loss or damage to property or third person, arising from the activities of its contractors.

I realize that the actions taken on the Property by EPA, and its authorized representatives, are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA"), 42 U.S.C.§§9601-et seq.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind. By my signature I also acknowledge that I am fully authorized to grant such access.

Signature

June 2, 2011

Name of Property Owner (Print)

## CONSENT FOR ACCESS TO PROPERTY

Address of Property in Which Interest Lies on Road 308 in the Centro Comercial La 100 in Cabo Rojo, Puerto Rico, I the undersigned, as owner or as a duly authorized representative of the owner consent to officers, employees, and authorized representatives of the United States Environmental Protection Agency ("EPA") entering and having continued access to the above-referenced property (hereinafter, "Property") to perform soil and ground water assessment activities. I understand that the assessment activities that will be performed at the property may include the following:

- Collection of soil gas vapor samples.
- Collection of soil and ground water samples using direct-push.
- Use of air monitoring instruments for health and safety purposes and/or wearing of protective clothing and equipment for compliance with Occupational Safety and Health Administration (OSHA) regulations.

I further consent to EPA releasing to the public all analytical results of any samples that EPA and its representatives collect or have collected on my property, as identified by my address, provided that copies of all such results and of any reports relating to the property are made available to the undersigned prior to such release.

I understand that EPA will require its contractors to maintain comprehensive vehicle liability insurance and comprehensive general liability insurance for bodily injury, death, and loss or damage to property or third person, arising from the activities of its contractors.

All activities to be perfored by EPA at the property will be duly coordinated with the undersigned or its representative prior to entering the property and EPA or its representative shall conduct the activies stated above in a manner that minimizes risks and/or interruption of use of the property. EPA and/or its representative shall, upon termination of its acvities, leave the property in the same state that it was at the time of the first entry.

I realize that the actions taken on the Property by EPA, and its authorized representatives, are undertaken pursuant to its response and enforcement responsibilities under the Comprehensive Environmental Response, Compensation and Liability Act of 1980, as amended (CERCLA"), 42 U.S.C.§§9601-et seq.

This written permission is given by me voluntarily with knowledge of my right to refuse and without threats or promises of any kind, except as herein set forth herein above. By my signature I also acknowledge that I am fully authorized to grant such access.

Signature May 20, 2011

Signature Date

Stella Investment, Inc.
Name of Property Owner (Print)

## EMAIL Zeno.Denise@epamail.epa.gov

June 6, 2011

Ms. Denise V. Zeno U.S. Environmental Protection Agency 290 Broadway, 18th Floor New York, NY 10007-1866

Dear Ms. Zeno:

Previously I sent you our consent to access to the La Cien Shopping Court premises for the sampling activities to be conducted on June 13, 2011 by Environmental Protection Agency personnel or representatives. As mentioned therein, coordination of the activities is essential in order to minimize any risk of interruption of the operations at the premises, particularly the Walgreens store.

In order to fully inform our tenants of the activities, which is our contractual duty, the following is requested: 1) Time and date of the commencement of activities; 2) duration of the activities; and 3) copy of the sampling plan and boring locations. As we need to perform the notice to our tenants before the commencement of the sampling activities, we request your cooperation in providing us the information requested above within a short term after receipt of this letter. Your quick response will assist in preventing delays.

Adrian Stella

Sincerely

# APPENDIX B

Photodocumentation

Cabo Rojo Site

February 2012



Photo 1. 6/13/11 - Well Installation at CRPDC-I01



**Photo 2.** 6/13/11 - Inside CRPDC Facing North (CRPDC-I02)



**Photo 3.** 6/13/11 - Well Installation CRPDC-I02



**Photo 4.** 6/13/11 - CRPDC-I01 (View: East)



Photo 5. 6/13/11 - Cementing Well at CRPDC-I04



**Photo 6.** 6/13/11 - Possible Drain Outlet into Courtyard – CRPDC-I04 SERAS-130-DTR-020912 Appendix B – Photodocumentation

Page B3



**Photo 7.** 6/13/11 - CRPDC-I04



**Photo 8.** 6/13/11 - Alley East of CRPDC (CRPDC-I04) Appendix B – Photodocumentation

Page B4

SERAS-130-DTR-020912



**Photo 9.** 6/13/11 - EQP-I01 Head Start



**Photo 10.** 6/13/11 - Inside Well DEC-I01



Photo 11. 6/13/11 - DEC-IO2 Inside Empty Store Next to Walgreens and Chinese Restaurant



**Photo 12.** 6/13/11 - EQP-I02



Photo 13. 6/13/11 - EQP Ground Moisture



**Photo 14.** 6/13/11 - EQP-I03 Appendix B – Photodocumentation



**Photo 15.** 6/13/11 - EQP-I03



Photo 16. 6/14/11 - CC-I01 Inside Chester's Chicken



Photo 17. 6/14/11 - CC-02 Behind Chester's Chicken



Photo 18. 6/14/11 - CC-02 Behind Chester's Chicken



**Photo 19.** 6/14/11 - CC-I02 Inside Clothing Store Next to Chester's Chicken (South)



**Photo 20.** 6/14/11 - CC-I03 Inside Empty Store South of Chester's Chicken



**Photo 21.** 6/14/11 - AC-I01 (Junta)



**Photo 22.** 6/14/11 - AC-I02 (Café)



**Photo 23.** 6/14/11 - RC-I01



**Photo 24.** 6/15/11 - PIP-09 (View: North)



**Photo 25.** 6/15/11 - PIP-10 (View: Northwest)



**Photo 26.** 6/15/11 - PIP-08 (View: Northwest)



**Photo 27.** 6/15/11 - PIP-07 (View: South)



**Photo 28.** 6/15/11 - PIP-07 (View: Northwest)



**Photo 29.** 6/15/11 - PIP-06 (View: West)



**Photo 30.** 6/15/11 - PIP-11 (View: North)



**Photo 31.** 6/15/11 - PIP-12 (View: Northeast)



**Photo 32.** 6/15/11 - PIP-13 (View: Northwest)



**Photo 33.** 6/15/11 - PIP-14 (View: Northeast)



**Photo 34.** 6/15/11 - PIP-15, PIP-16 (View: North)



**Photo 35.** 6/15/11 - PIP-14 (View: East)



**Photo 36.** 6/15/11 - PIP-15 (View: North)



**Photo 37.** 6/15/11 - PIP-16 (View: Northeast)



**Photo 38.** 6/15/11 - PIP-17 (View: East)



**Photo 39.** 6/15/11 - PIP-22 (View: Southeast)



**Photo 40.** 6/15/11 - PIP-21, PIP-20 (View: South)



**Photo 41.** 6/15/11 - Porch Near PIP-19 (View: Southwest)



Photo 42. 6/15/11 - Drum on Porch Near PIP-19 (View: West)



**Photo 43.** 6/15/11 - PIP-20 (View: East)



**Photo 44.** 6/15/11 - PIP-18 (View: South)



**Photo 45.** 6/15/11 - PIP-18 (View: North)



**Photo 46.** 6/15/11 - PIP-23 (View: Southeast)



**Photo 47.** 6/15/11 - PIP-25 (View: West)



**Photo 48.** 6/15/11 - PIP-27 (View: South)



**Photo 49.** 6/15/11 - PIP-28 (View: West)



**Photo 50.** 6/15/11 - PIP-01 (View: East)



**Photo 51.** 6/15/11 - PIP-02 (View: Northeast)



**Photo 52.** 6/15/11 - PIP-03, PIP-04 (View: North)



**Photo 53.** 6/15/11 - Sampling PIP-04 (View: East)



**Photo 54.** 6/15/11 - PIP-05 (View: South)



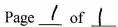
# SERAS

#### **Tedlar Bag Sampling Worksheet**

Site: <u>Cabo Rojo</u>						WA# <u>0-</u> 130
Sampler: Jon M	1 BURNEY			U.S. EF	PA/ERT WAM: <u>Cata</u>	ınzarita
Date: 6/14/11		0.5.0		SER	AS Task Leader: Mc	Burney
Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
DEC-08	DELEGANT	-mažor	^ 7 <sup>′</sup>	8.55	VOYAGER	1
DEC-07	D'ELGANT	1	3.5	9:10	VOYAGER	1
DEC-06	DECEGANT	4.8	3.5	9:30	VOYROOR	1
DEC-05	D'ELEGANT	20.8	3.5'	9:40	VOYAGER VOYAGER	j
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Comments: MUTRAE 016933 CAL 6/8/11







### **Tedlar Bag Sampling Worksheet**

Site:	Cabo	Rojo

WA# <u>0-</u> 130

Sampler: TON MCBJRNCY	u.s. epa/ert wam: <u>Catanzarita</u>
Date: 4/14/11	SERAS Task Leader: McBurney

Sample #	Location	Sub Location Pip	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
DEC-04	D'ELEGANT	0.2	3.5'	9:55	YOTABEK	-1
<b>P</b> EC -03	D'ELEGANT	1.0	3.5'	10:00	VOYX GER	1
DEC-01	D'ELEGANT	0,9	3.51	10:15	VOYAGER	1
DEC-02	D'FLEGANT	0.0	3.5	10:45	VOYAGER	
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6/14/11 WA-0-130 CRPD6-02 3.5 5.3 CRPDG-03 3.5 13:45 0.0 CRPAG-01 3.5' NO SAMPLE 0.7 3,5 13:55 CRPDE-04 7 CRPDC - OL EQP-02 1500 351 22 0.4 3.51 1505 Eap-01 3.5' 15:40 58.7 EOP-03 3.51 15:30 3.4 EAP-04

Commons: MULTIRAE 010933 Ca- 6/8/11

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DATE TIME 6/14/11 16:05 SAMPLER - J. M. BURNOY

6/14/11

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EQP-17

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17:00

3.0'

Commonis: MULTIRAE 010933 CAL 6/8/11

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# SERAS

### **Tedlar Bag Sampling Worksheet**

Site: Cabo Rojo
Sampler: Dubois/Magan
Date: 6/14/11

WA# 0-130

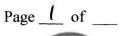
U.S. EPA/ERT WAM: Catanzarita

SERAS Task Leader: McBurney

Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)	
	CRIPD 10302	sunfloor ~ 6" down void to	31		17.0 4.5 or 19.0	1-2	
	CRPD TOZO	supred voist	026	1615	1719 % DO	6-6- Sem	in
	RPD TOS	Swale" beneate	= dux	1637	3,5 ppm (7.9 602	1-1	10000
	CRAB LOY	sug ~ le" bened	= d.7	1605	PID 229	1-LA4	þ
	FOR-LOI	Hood Stert 187	2 feet				
3	DEC-201	~68956 W	~38+	1525	P10-0 02-~15%	1-4	
	DEC -202	emory Bider	-3ft	1507	Did not take in	1-6	1
	FOP- I-02	sigh arried	voi d		, , ,		
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# SERAS

Site: <u>Cab</u>	oo Rojo	. /					WA	# <u>0-130</u>
Sampler:	Dubo	is/magan				U.S. EP	a/ert wam: <u>Cata</u>	nzarita
Date:(	elis lu					SERA	AS Task Leader: Mcl	Burney
Sa	mple #	Location	Sub Loc	ation	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
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#### EPA/Environmental Response Team Scientific, Engineering, Response and Analytical Services Lockheed Martin Corp., Edison, NJ U.S. EPA Contract No. EP-W-09-031

Site: Cabo Rojo					WA#	<u>0-130</u>
Sampler: McBu	RUCY/BROSSMAN	Tak		U.S. EPA	a/ert waм: <u>Catar</u>	nzarita
Date: $6/15/$	[11			SERA	S Task Leader: McB	Burney
Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
51-03	FERMUND 1	4.2	3.5'	10:30	VOYAGER	J
51-02	11	1.7	3.5	10:35	1	1
51-0301	(1	0.3	3.5'	10:40	1	1
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# SERAS

6/15/11

	ite: <u>Cabo Rojo</u>					WA#	<u>0-130</u>
S	ampler: N Buck	LARY/GROSSMAN			U.S. EP.	a/ert wam: <u>Catai</u>	<u>ızarita</u>
D	Date: 6/15/1	((			SERA	AS Task Leader: McE	Burney
	Sample #	Location	Sub Location 46	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
	C(-0)	CHESTER'S CHICKEN	1.7	3.5	11.00	VOYAGER	1
	C(-0) Cc-07	Il K	2.7	3.5'	115 18	VoyageR	- (
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### **Tedlar Bag Sampling Worksheet**

Site: Cat	oo Kojo
Sampler:	McBURACY/GR OSSMAN
Date:	Celisti

WA# <u>0-130</u>

U.S. EPA/ERT WAM: Catanzarita

SERAS Task Leader: McBurney

Sample #	Location	Sub-Location 1D	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
52 011						-gen
52-01	SERRANNO Z	0.5	3.5	1521	VOYAGER	
52-02 1	it	2.4	3.5'	1525	VOYNGER	
52-03	SERLANCE B2	0.3 * 2	3.5	1530	VOYAGER	
52-04	ι(	D.0	3.5'	1545		<u>i</u>
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ite: <u>Cabo R</u>		/						WA# <u>0-</u>
ampler:	MBU	) S/Magan				U.S. EI	pa/ert wam: <u>Cata</u>	nzarita
ate:(e/1	15/11					SER	AS Task Leader: McI	Burney
Sampl	le#	Location	Sub Location	1	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
	<b>&gt;</b>	RC-IDI	3'Soil			14,00	Ø1) = Ø	1-2
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Site: Cabo Rojo	2				WA#	<u> 0-130</u>	
Sampler: <u>Dhb</u>	is/Magar			U.S. EP	а/ert wam: <u>Cata</u> ı	nzarita	
Date: $\sqrt{(5)}$	111			SERA	AS Task Leader: McF	<u>Burney</u>	
Sample #	Location	Sub Locati	on Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)	
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Site:	Cabo Rojo	1				WA#	<u>0-130</u>	
Samp	oler: McBuk	my GROSSMAN			U.S. EPA	A/ERT WAM: Catar	<u>ızarita</u>	
Date:	6/16/1	my GROSSMAN			SERA	S Task Leader: McB	urney	
	Sample #	Location	Sub-Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)	
	1P-215	PRIDCO I.P	0.6	3.5	8:20	VOTAGER	(	
4	PIP-15	V1	3,6	3,5	8:24	VOYAGE		
	PIP-14	11	0.6	3.5'	8:30	10-15	65 mm	n A
5	71P-16	( 1	3,2	3.5	8-40	VOYAGER	<i></i>	
Ý	PP-17	) (	1.5	3.5	8:45	VOYNGER	1	
	PIP-23	<i>(</i> (	0.0	3.5'	9:00		ĺ	
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			(					
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Page \_\_\_ of

WA# <u>0-130</u>



### **Tedlar Bag Sampling Worksheet**

Site: Cabo Rojo	
Sampler: MCBURNEY/GROSSMAN	U.S. EI
Date: 6/16/11	SER

EPA/ERT WAM: Catanzarita

RAS Task Leader: McBurney

	Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
	PIP-22	PRIXO IND. PAR	2.5	3.5	9:25	VOYAGER VOYAGER	
/	PIP-11	c (	Ж.	3.5	10:0	O VOYAGEK	1
	P1P-12	\(	* .	7.5'	10:30		(
1	P1P-13	(1) qi	× 0.3	3.5	u:to	VDYAGER	(
	PIP-OI	И	0.0	3.5'	11:25	VOYAGER	
1	PjP-10	βĺ	0.0	3,5	11:30	VOYAGER	
	PIP-08	* 1(	0.0	3.5	11:45	VOYAGER VOYAGER	(
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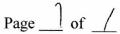
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Site: Cabo Rojo	/				<b>, WA</b> #	<u>0-130</u>	
Sampler: Du Bo	n Megan			U.S. EPA	а/ект wam: <u>Cata</u>	<u>nzarita</u>	
Date: 4/16/	17			SERA	S Task Leader: McF	Burney	
Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)	
AC-ZOZ	Aceredo clames	P10=11.3+1	21	11:20	Voyager	1-4	
AC-201	Junta ( Very	/	31	1130	Voyager	1-2	
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# SERAS

Site: Cabo Rojo	,				WA#	<u>0-130</u>
Sampler: MGJR	NOM GROSSMAN			U.S. EPA	a/ert wam: <u>Catai</u>	<u>ızarita</u>
Date: 6/16/1	1 /			SERA	S Task Leader: McF	Burney
Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
P1P-07	PRIDO INO. PARK	0.0	3.5'	13120	VOYAGER	
P1P-06	· \(	0.0	3.5	13:30	VOYAGER	(
PIP-01.	AR II	0.0	3.5'	13:50	VOYAGER	1
PIP-01D	V)	0.0	3.5	13,55	VOYAGER	1
PIP-023	17	0.0	3.5	14:05	VOYAGER	(
P1P-02	it	0,0	3.5	14:32	VOYAGER	1
P17-04	"	0.0	3.5	14:48		1
PIP-05	1.	0.0	351	1455	VOYAGER	1
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Items/Reason	Relinquished by	Date ,	Received by	Date	Time
ALIJONALTIJ	1/10	6/16/11	R.Dw	6/16/4	15:20







Si	te: <u>Cabo Rojo</u>	,					WA# 0- 130
Sa	impler: Mos )	5/magn			U.S. EP	a/ert wam: <u>Cata</u>	nzarita
	ate: <u>le//u/</u>	in			SERA	AS Task Leader: <u>Mc</u>	Burney
	Sample #	Location	Sub Location	Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
1	RSL-801	Blun gate I down		3'	13:30	Voyager	1-4
ling	PTP - 21	Pride Park	PiD=3.5	2' (rouse	15:18	Voyager	1-6
B,	Pap 20	Sleige box	PID=1.8	3.5'	15:34	Voyage	1-6
,	121-29	Zeophobe	PiD=0.9	351	15:40	Voyager	1-2
سمر	PIP-19	Slum /sur	P()=0.0	refund	15:58	Voyager	1-6
z.	P2P-18	Steingbax	As 0.C	) 3.51	16:09	Voyager	1-6
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			And				
C-	omments:						
	minicuts.						160-1
	y a second a	2244				manufacture in the Company of the control of the co	Managara and State of the State
Ite Ø/	ms/Reason F	Relinquished by	Date / F	Received by		Date 6/14/11	Time 14:52





Sample     Location   Alba-Forgition   Data   Lime	
Sample # Location Sub-Location Depth Time Tedlar Bag Analysis/Method  PIP-27 Reporting PARK 17 # 2' # 8:10 VOYAGER  PIP-26 1: 0' 1,4 35' 8:18 VOYAGER  EC-84 Galon Cuttled N/A 3.5' 8:58 Voyager	<u>-130</u>
Sample # Location Sub-Location Depth Time Tedlar Bag Analysis/Method  PIP-27 Repos Ins. PARK 17 ** 2' * 8:10 VOYAGER  PIP-26 1' 0' 1,4 35' 8:18 VOYAGER  EC-84 Cahon (introduction Depth Time Analysis/Method  N/A 3.5' 8:58 VOYAGER	arita
Sample # Location Depth Time Analysis/Method  PIP-27 Report Two. PARK 17 # 2' # 9:10 VOYAGER  PIP-26 1	rney
PIP-26 1: 01 1.4 35' 8:18 VOYACER 1 EC-84 Cabon Cuttler N/A 3.5' 8:58 Voyager	Volume (Liters)
PIP-26 11 01 1.4 35 8:18 VOYACER 1 EC-14 Cabor Cuttler N/A 3,5 8:58 Voyager	1
EC-84 Caborlither N/A 3,5 8:58 Voyager	(
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(160)	
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Comments:  ** REFUSAL @ 2 DUE TO SULFILOW BEDROCK.  *** MAY 200+, FALL to 17	
Items/Reason Relinquished by Date / Received by Date	Time

	Items/Reason	Relinquished by	Date /	Received by	Date	Time
F	3/Analy Gr	900	4/7/1	Mars	6/17/11	10:32
k				1		
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#### EPA/Environmental Response Team Scientific, Engineering, Response and Analytical Services Lockheed Martin Corp., Edison, NJ U.S. EPA Contract No. EP-W-09-031



te: <u>Cabo Rojo</u>					WA#	<u> 0-130</u>
ampler: <u>6/17</u>	DIMON			U.S. EP	a/ert wam: <u>Cata</u>	nzarita
ate: 6/17	/11			SERA	S Task Leader: McI	Burney
Sample #	Location	Sub Locat	ion Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
)	Pridero	PIP-2:	5 3.5	8:45	Feb V- Jagez	10
)	PRIOLE.	DIP. 28	3.5	9:05	1/2	12
PTP-25	PRIDCO	0.0	3.5'	8:45	Voyager	11
PIP-25 PIP-28	PRIDES	0.0	3.5			14
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# SERAS

Site: Cabo Rojo					WA#	<u>0-130</u>	
Sampler: Do bio	, ,			U.S. EP.	a/ert wam: <u>Catar</u>	nzarita	
Date: 0 171	/11			SERA	AS Task Leader: McB	lurney	
Sample #	Location OrageN	Sub Locat	ion Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)	
EC-03	Eston Fuller	PIN=10	0 25	10.72	Vougeer	/	
EC-02		01D=0	0.0 41	10:25	104 ager	1	
EC-01	4	P11)=	of hale	10.25	Voyagor	į	
600001	Relo RXI		2.51		1 8		(A
2510-02			<u>'y'</u>				A
1200-03	1		3.5'				A
10-04	KOY	M3=0	1 4'	12:03	Voyager		\
800-05	R :05	P1)=0.	3 4	11.55	Voyager	_'/	
R50-06	R-06	b1)=0.	35'	11:48	Voyager		
R\$40.07	R-07	PD=0-	7 3'	11:58	Voyager		
		A		September 19 March 19			
		(A)	and the second s			=	
		0					
		•					
Comments: * h	ole to 35' - W	et, San	fled @	<u> </u>			_
		*					
	\$ \$						
Items/Reason	Relinquished by	Date 6/17/4	Received by		Date	Time	$\Box$
ALL/ANALYONS	you _	6/17/4	Dreit		dirlu	13:47	$\exists$









Site: Cabo Rojo		9			WA#	0-130
Sampler: 6703	smen			U.S. EP.	a/ert wam: <u>Cata</u> i	nzarita
Date: 6/17/1				SERA	S Task Leader: McF	Burney
Sample #	Location	Sub Locati	on Well Depth	Time	Tedlar Bag Analysis/Method	Volume (Liters)
58-01	Santander Bunk	0.0	3.5	10:55	Voyagee	j L
SB-02	Suntander Bonk	0.6	3.5	11:02	Voyagee	16
58.03	Suntander Bunk	0.3	3.5	11:11		14
58-04	Suntander Bank	0.0	3.5'	11:16	Voyagea	14
R-01	Reto	0.3	3.5'	11:52		14
R-D2	Reto	0.3	4'	12:00	Voyagez	14
R-03	Reto	0.3	3.51	12.08	, -	11
					, ,	
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Comments:						
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Items/Reason	Refigeruished by	Date	Received by		Date	Time
ALLIANDLYSIS	MIC	6/17/11	DAM		6/11/11	13:47

# APPENDIX D Photovac Voyager Operating Procedure for the Cabo Rojo Site Cabo Rojo Site February 2012

#### Photovac Voyager Operating Procedure for the Cabo Rojo Site

#### METHOD SUMMARY

Air/soil gas samples can be analyzed by the Photovac Voyager. Brief method summaries are provided below. All methods use a Photovac Voyager GC equipped with a 10.6 eV ultraviolet light source and a Photoionization Detector (PID), and use external standards to tentatively identify and quantitate compounds of interest. Gaseous contaminants are ionized as they emerge from the column. The ions are then attracted to an oppositely charged electrode which causes a current and sends an electronic signal to the Photovac internal microprocessor.

#### Air/Soil Gas Samples

Ambient air or soil gas samples are withdrawn using the Photovac Voyager probe with and internal pump and directly injected onto the loop of the GC .

#### INTERFERENCES AND POTENTIAL PROBLEMS

This instrument is <u>not</u> to be exposed to precipitation. This instrument is best utilized in a stable temperature environment 5°C to 40°C to avoid the fluctuating retention times which may occur with changing temperatures. Readings can only be reported relative to retention times of the calibration standard used. It is advisable to avoid combustion fumes while using the instrument as they can contaminate the column. High sample alkane concentration, C<sub>1</sub>-C<sub>6</sub>, as in many landfill samples, may interfere with the resolution and detector response of early eluting aromatics and chlorinated alkenes.

#### Air/Soil Gas Calibration

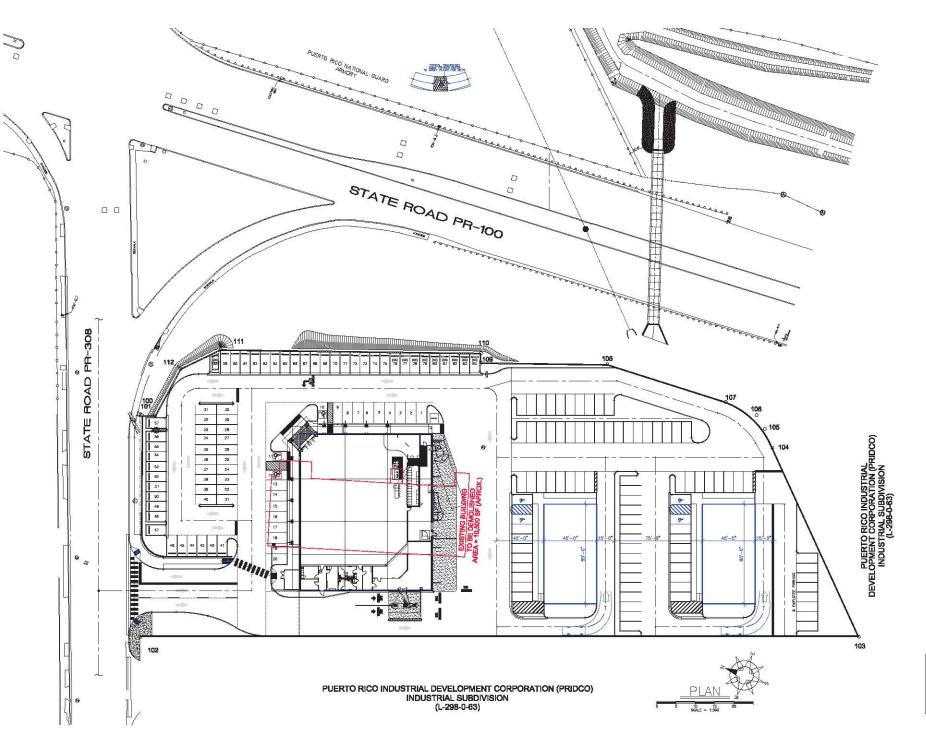
Since multiple calibrations may be needed for a field analysis, the original standard is diluted into Summa canisters to provide maximum stability in the field. Tiplically a series of 10ppbv, 50 ppbv, 100 ppbv and 500 ppbv standards are made up in Summa Canisters. Once transported to the field, each canister can be used to fill 10 to 15 one L Tedlar bags from which aliquots can be analyzed. The analyst constructs a calibration curve by injecting the same volumes. By setting the Photovac Voyager to pump 10 sec and inject for 5 sec a 250 µL injection volume will be introduced onto the GC column, a four point cal curve can be established.

#### QUALITY ASSURANCE/QUALITY CONTROL

The following QA/QC requirements must be followed and provided in the data package submitted:

- Chain of custody documentation.
- Sample log, including date and time of sample collection, date and time of analysis, and run numbers.
- Instrument calibration data.
- Method Blanks are to be analyzed after samples containing high concentrations of analytes. If a sample has low or non-detect concentrations of analytes no blanks will be analyzed.

- Labeling of chromatograms Each chromatogram must be clearly identified by analysis type (i.e., sample number, or calibrant concentration), injection time (sec), run number, date, and time.
- Duplicates analysis A duplicate sample analysis is to be performed on field duplicates to check method/analyst precision. The RPD of the area response of any of the compounds should be within 30%.
- Retention time/instrument response check Since compound identification is based upon RT matches, a mid-range calibration standard should be analyzed every 6 hours of operation.





Date:

July 5, 2011

To:

Work Assignment Manager: Jeff Catanzarita/George Prince, EPA/ERTC

V Kansal. Analytical Group Leader, SERAS //word Yaussel

From:

Subject:

Preliminary Results of VOCs in Air Analysis using SERAS SOP# 1814

Project:

Cabo Rojo, WA# 0-130

This document contains the analytical results and report for the following samples:

Chain(s) of Custody #:

2-062111-093714-0005

Analyses:

TO-15

No. of Samples:

3

Matrix:

Air

This report contains the results of 3 samples received on 07/05/11 for analysis of VOCs in Air by EPA TO-15.

R. Singhvi, V.Kansal, D. Miller, D. Killeen, Jon McBurney, G. Depasquale

cc

ec

Analyst: Ben Beauchaine

Central File

Table 1.1 Result of the Analysis for VOC (ppbv) in Air WA# 0-130 Cabo Rojo

#### Method: SERAS SOP#1814

Sample Number Sample Location Sublocation		d Blank /2011	0-130-0040 PIP-14		0-130-0088 CRPDC-I01		Method Blank 6/24/2011		0-130-0094 Trip Blank	
	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
Analyte	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv	ppbv
Vinyl Chloride	U	0.0300	U	0.0300	U	0.150	U	0.0300	U	0.0300
1,1-Dichloroethene	U	0.0300	U	0.0300	U	0.150	U	0.0300	U	0.0300
trans-1,2-Dichloroethene	U	0.0300	U	0.0300	U	0.150	U	0.0300	U	0.0300
1,1-Dichloroethane	U	0.0300	U	0.0300	U	0.150	U	0.0300	U	0.0300
cis-1,2-Dichloroethene	U	0.0300	U	0.0300	U	0.150	U	0.0300	U	0.0300
1,2-Dichloroethane	U	0.0300	U	0.0300	U	0.150	U	0.0300	U	0.0300
Trichloroethene	U	0.0300	U	0.0300	57.2	0.150	U	0.0300	U	0.0300
Tetrachloroethene	U	0.0300	0.151	0.150	100000	750	U	0.0300	U	0.0300

Table 1.1 Result of the Analysis for VOC( $\mu$ g/m3) in Air WA# 0-130 Cabo Rojo

#### Method: SERAS SOP#1814

Sample Number Sample Location Sublocation		d Blank /2011	0-130-0040 PIP-14		0-130-0088 CRPDC-I01		Method Blank 6/24/2011		0-130-0094 Trip Blank	
	Results	RL	Results	RL	Results	RL	Results	RL	Results	RL
Analyte	μg/m3	µg/m3	μg/m3	µg/m3	μg/m3	µg/m3	μg/m3	µg/m3	µg/m3	μg/m3
Vinyl Chloride	U	0.0767	U	0.0767	U	0.383	U	0.0767	U	0.0767
1,1-Dichloroethene	U	0.119	U	0.119	U	0.595	U	0.119	U	0.119
trans-1,2-Dichloroethene	U	0.119	U	0.119	U	0.595	U	0.119	U	0.119
1,1-Dichloroethane	U	0.121	U	0.121	U	0.607	U	0.121	U	0.121
cis-1,2-Dichloroethene	U	0.119	U	0.119	U	0.595	U	0.119	U	0.119
1,2-Dichloroethane	U	0.121	U	0.121	U	0.607	U	0.121	U	0.121
Trichloroethene	U	0.161	U	0.161	308	0.806	U	0.161	U	0.161
Tetrachloroethene	U	0.203	1.03	1.02	681000	5090	U	0.203	U	0.203



USEPA

**CHAIN OF CUSTODY RECORD** 

No: 2-062111-093714-0005

Cooler #: Lab: SERAS

DateShipped: CarrierName: Cabo Rojo

Jon McBurney

609-937-9116

AirbillNo:	WO#	P	106003
	VV \ / · ·	<b>N</b>	100000

Lab#	Sample #	Location	Analyses	Matrix	Collected	Num b Cont	Container	Preservati ve	Start Press ure	Stop Press ure	Sample_Remar ks	MS/MS D
-01	0-130-0040	PIP-14	TO-15	Soil Gas	6/16/2011	1	Summa Canister	None	-30	0	PID 0.6 SUMMA ID = 23	N
-02	0-130-0088	CRPDC-I01	TO-15	Soil Gas	6/14/2011	1	Summa Canister	None	-30	0	PID 65 SUMMA ID: 135	N
-03	0-130-0094	Trip Blank	TO-15	Air	6/17/2011	1	Summa Canister	None	-30		Summa ID = 32	N
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SAMPLES TRANSFERRED FROM
Special Instructions:

CHAIN OF CUSTODY #

Items/Reason	Relinquished by	Date	Received by	Date	Time	Items/Reason	Relinquished By	Date	Received by	Date / Time
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